

WHAT IS CLAIMED IS:

1. An oxide superconducting wire comprising:

oxide superconductors;

a ceramic layer enclosing and being in contact with each of said oxide

5 superconductors, said ceramic layer becoming non-superconducting at operational temperature of said oxide superconductors, and;

a metal sheath directly coating said ceramic layer.

2. An oxide superconducting wire as defined in claim 1, wherein said

10 oxide superconductors are divided into a plurality of segments.

3. An oxide superconducting wire as defined in claim 1 or 2, wherein said oxide superconductors are configured to spirally extend around the central axis of said oxide superconducting wire.

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4. An oxide superconducting wire as defined in claims 1, wherein said ceramic layer contains an oxide including at least one kind selected from the group consisting of bismuth, lead, strontium, calcium, barium, titanium, niobium, molybdenum, tantalum, tungsten, vanadium, zirconium, copper
20 and silver.

5. An oxide superconducting wire provided in one of the claims 1 wherein said oxide superconductors are bismuth-based superconductors.

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6. An oxide superconducting wire as defined in claim 4, wherein said ceramic layers contains an oxide including an alkali earth metal and copper.

5 7. An oxide superconducting wire as defined in claim 1, wherein said metal sheath include at least one kind selected from the group consisting of silver, copper, manganese, magnesium, antimony, iron, chromium, and nickel.

10 8. An oxide superconducting wire comprising:
oxide superconductors;
a ceramic layers formed by extrusion, said ceramic layer enclosing said oxide superconductors and becoming non-superconducting at operating temperature of said oxide superconductors and;
15 a metal sheath encasing said ceramic layer.

9. An oxide superconducting wire as defined in claim 8, wherein a silver-based sheath is interposed between each of said oxide superconductors and said ceramic layer.

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10. An oxide superconducting wire as defined in claim 8, wherein said ceramic layer enclosing and being in contact with each of said oxide superconductors.

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11. A method of producing an oxide superconducting wire, said method comprising the steps of:

forming a precursor of oxide superconductors into a rod;

5 forming a ceramic layer on the surface of said rod to produce a ceramic-coated rod;

inserting a plurality of said ceramic-coated rods into a metal pipe to produce a multifilament billet;

subjecting said multifilament billet to plastic deformation to form a
10 multifilament wire;

subjecting said multifilament wire to a heat treatment to produce oxide superconductors.

12. A method of producing an oxide superconducting wire, said method

15 comprising the steps of:

forming a ceramic powders into a ceramic pipe;

filling a precursor of oxide superconductors in said ceramic pipe to produce a ceramic-coated rod;

inserting a plurality of said ceramic-coated rods into a metal pipe to produce
20 a multifilament billet;

subjecting said multifilament billet to plastic deformation to produce a multifilament wire;

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subjecting said multifilament wire to a heat treatment to produce oxide superconductors.

13. A method of producing an oxide superconducting wire, said method
5 comprising the steps of:
forming a ceramic powder into a ceramic billet having a plurality of holes
extending in a longitudinal direction;
filling a precursor of oxide superconductor into said holes to produce a
ceramic-coated rod;
10 inserting a plurality of said ceramic-coated rods into a metal pipe to produce
a multifilament billet;
subjecting said multifilament billet to plastic deformation to produce a
multifilament wire;
subjecting said multifilament wire to a heat treatment to produce oxide
15 superconductors.

14. A method of producing an oxide superconducting wire, said method
comprising the steps of:
forming a precursor of oxide superconductor in silver-based sheath to
20 produce a coated rod;
forming a ceramic layer on the surface of said coated rod by extrusion to
produce a ceramic-coated rod;

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inserting a plurality of said ceramic-coated rods into a metal pipe to produce a multifilament billet;

subjecting said multifilament billet to plastic deformation to produce a multifilament wire;

5 subjecting said multifilament wire to a heat treatment to produce oxide superconductors.

15. A method of producing an oxide superconducting wire as defined in one of claims from 11 to 13, wherein said precursor of said oxide
10 superconductors contains a part of the composition of said oxide superconductors, while said ceramic powder contains the remaining composition of said oxide superconductors.

16. A method of producing an oxide superconducting wire as defined in
15 one of claims 11 to 14, said method further comprising a step of twisting said multifilament wire prior to said heat treatment.

17. A method of producing an oxide superconducting wire as defined in one of claims 11 to 14, wherein the powder of said ceramic layer contains an
20 oxide of at least one kind selected from the group consisting of bismuth, lead, strontium, calcium, barium, titanium, niobium, molybdenum, tantalum, tungsten, vanadium, zirconium, copper and silver.

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18. A method of producing an oxide superconducting wire as defined in one of claims 11 to 14, wherein said oxide superconductors are bismuth-based superconductors.

5 19. A method of producing an oxide superconducting wire as defined in claim 17, wherein said powder of ceramic layer contains an oxide including an alkali earth metal and copper.

20. A method of producing an oxide superconducting wire as defined in
10 one of claims 11 to 14, wherein said metal pipe contains at least one kind selected from the group consisting of silver, copper, manganese, magnesium, antimony, iron, chromium, and nickel.

21. A method of producing an oxide superconducting wire as defined in
15 of claim 11, wherein said ceramic layer formed by an extrusion process.

22. A method of producing an oxide superconducting wire as defined in claim 12, wherein said ceramic pipe is formed by an extrusion process.

20 23. A method of producing an oxide superconducting wire as defined in claim 13, wherein said ceramic billet is formed by an extrusion process.

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